Matteo Nurisso, Ph.D.

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Employment

2024 – present   🔖 **Assegno di ricerca Post Dottorale (Post-Doc)** Consiglio Nazionale delle Ricerche, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Turin.
Topic: EPOCHAL project about paleoclimate simulations and code development of AQUA in the Destination Earth project.

2022 – 2024   🔖 **Assegno di ricerca professionalizzante** Consiglio Nazionale delle Ricerche, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Turin.
Topic: Teleconnections diagnostic and code development of the framework for the AQUA code in the Destination Earth project.

Education

2018 – 2022   🔖 **Ph.D., Scuola Internazionale di Studi Superiori Avanzati (SISSA)** Astrophysics and Cosmology.
Thesis title: *Particles acceleration with Magnetic Reconnection in large scale MHD simulations.*
Supervisors: *Annalisa Celotti and Andrea Mignone*

2014 – 2018   🔖 **Master Degree , University of Turin** Astrophysics and Theoretical Physics.
Thesis title: *Anisotropic Cosmic Ray transport in the galaxy with PLUTO.*
Supervisors: *Andrea Mignone and Nicolao Fornengo*

2011 – 2014   🔖 **Bachelor Degree , University of Turin** Physics.
Thesis title: *The Heisenberg model and the Bethe Ansatz.*
Supervisor: *Marco Billó*

Research Publications

1   Caprioli, S., von Hardenberg, J., Ghinassi, P., Ghosh, S., Kluft, L., Koldunov, N., … Davini, P. (2024). Aqua: A novel quality assessment tool for km-scale simulations in the destination earth climate digital twin - the diagnostics suite. 🔗 doi:10.5194/egusphere-egu24-11230

2   Nazarova, N., von Hardenberg, J., Davini, P., **Nurisso, M.**, Caprioli, S., & Ghinassi, P. (2024). Evaluating tropical precipitation extremes: Insights from first simulations from nextgems and destination earth climate digital twin. 🔗 doi:10.5194/egusphere-egu24-11498

3   **Nurisso, M.**, von Hardenberg, J., Caprioli, S., Ghosh, S., Koldunov, N., P. Kinoshita, B., … Davini, P. (2024). Aqua: A novel quality assessment tool for km-scale simulations in the destination earth climate digital twin - the core framework. 🔗 doi:10.5194/egusphere-egu24-10935

4   **Nurisso, M.**, Celotti, A., Mignone, A., & Bodo, G. (2023). Particles acceleration with magnetic reconnection in large scale RMHD simulations: I. current sheet identification and characterization. *Monthly Notices of the Royal Astronomical Society.* 🔗 doi:10.1093/mnras/stad1348

5   **Nurisso, M.**, Celotti, A., Mignone, A., & Bodo, G. (2022). Particle acceleration via magnetic reconnection in large-scale MHD jet simulations. (Vol. 17, pp. 54–55). 🔗 doi:10.1017/s1743921323000935

6   **Nurisso, M.** (2022). *Particles acceleration with magnetic reconnection in large scale mhd simulations* (Ph.D thesis). Retrieved from 🔗 https://hdl.handle.net/20.500.11767/130671

7   **Nurisso, M.** (2018). Anisotropic cosmic ray transport in the galaxy with pluto. Retrieved from 🔗 https://api.semanticscholar.org/CorpusID:221133901

Projects

2024 – present   ▌ Participation as Post-Doc in the PRIN: **Earth system modeling of PaleOClimatic HyperthermALs** (EPOCHAL) founded by the NextGeneration EU.

▌ Participation in the WP14 and Activity 8 (A8 corresponding to WP7 of the Phase 1) of the **Destination Earth Climate Digital Twin** project Phase 2, a flagship initiative of the European Commission.

2022 – 2024   ▌ Participation in the WP7 of the **Destination Earth Climate Digital Twin** project Phase 1, a flagship initiative of the European Commission.

Code contributions

▌ AQUA (Application for Quality assessment and Uncertainity quAntification). Developer of the framework and the teleconnections and timeseries diagnostics.

▌ Stece code. A collection of script and tools for EC-EARTH4.

▌ PLUTO code. Developer of a module for magnetic reconnection particles acceleration in Magneto-Hydrodynamical simulations.

Conferences and Hackatons

2024   ▌

▌ **EGU General Assembly 2024** (Vienna, Austria) (Abstract: `https://meetingorganizer.copernicus.org/EGU24/EGU24-10935.html`)

▌ **EC-Earth General Assembly** (De Bilt, Netherlands)

2023   ▌ **2nd Destination Earth User eXchange** (Bonn, Germany) (Poster from AQUA code: `http://bit.ly/aqua-poster`)

▌ **NextGEMS Cycle 3 Hackathon** (Madrid, Spain)

▌ **Destination Earth Hackathon** @ BSC (Barcelona, Spain)

2022   ▌ **7th Heidelberg International Symposium on High-Energy Gamma-Ray Astronomy** (Barcelona, Spain)

▌ **Active Galactic Nuclei XIV: The Renaissance of Black Holes and Galaxies** (Florence, Italy)

2020   ▌ **EuroScience Open Forum 2020** (Trieste, Italy)

2019   ▌ **International Conference of Physics Students 2019** (Cologne, Germany)

2017   ▌ **International Conference of Physics Students 2017** (Turin, Italy)

Skills

Languages   ▌ Strong reading, writing and speaking competencies for English and Italian.
Moderate reading, writing and speaking competencies for French.

Coding   ▌ C, C++, Python (xarray, dask), Fortran

Software   ▌ Git, Github, Linux, Slurm, EC-Earth ESM code, CDO, CI/CD, MPI, OpenMP, Cuda, IDL, Visit, Html, PLUTO MHD code

Scientific   ▌ Climate simulations, Magnetohydrodynamic simulations, Academic research, LaTeX typesetting and publishing.

Miscellaneous Experience

Teaching

2017 – 2018	**Tutor** of "Introduzione alla programmazione", University of Turin

Workshops

2023	**CodeRefinery workshop**: Introduction to Git, Collaborative distributed version control, Reproducible and tested code and research
2022	**SCtrain training week**: Introduction to Parallel Programming
2021	**Machine Learning Lectures** Cluster of Galaxies IFPU group
2020	**Deep Learning Day** AI Student Society

Science Communication

2022	**Social media management** and **Personal Branding**
	Science Communication: the use of objects and easy experiments in face-to-face events
2021	**Science Communication** mini-course
2019	**Training and Sharing**: Best practices in Science Communication
	Science Dialogues: training course on Science Communication

Outreach

2020-2022	**Trieste Next** volunteer
2018 – 2022	**Sissa4Schools** volunteer
2018-2021	**SISSA Student Day** speaker
2017	**ICPS** volunteer (International Conference of Physics Students)
2013 – present	President (since 2024) of **Silviadizenzero**, active in Climate Science outreach